File name: MAGIC_Manning_et_al_README.pdf
Prepared: July 30, 2012

These file contain the association analysis results presented in the MAGIC paper describing a genome-wide approach accounting for body mass index (BMI in the meta-analysis of glycemic traits[1].

The glucose results are from an analysis of 29 studies in up to 58,074 non-diabetic participants and the insulin results are from an analysis of 26 studies in up to 51,750 non-diabetic participants.

Trait values for fasting insulin have been naturally log transformed. Fasting glucose (mmol/l) and BMI (kg/m^2) values have not been transformed. The regression models included adjustment for age and sex as well as study-specific adjustments.

The two interaction analyses are (1) a meta-analysis of the interaction regression estimate β_3 from a model $Y=\beta_0+\beta_1*SNP+\beta_2*BMI+\beta_3*SNP*BMI$ and (2) the joint meta-analysis (JMA) of the β_1 and β_3 regression estimates which takes the covariance between these two estimates into account. The methodology for the JMA is described in Manning et al[2].

When using data from the downloadable meta-analyses results please acknowledge the source of the data as follows: "Data on glycemic traits have been contributed by MAGIC investigators and have been downloaded from www.magicinvestigators.org" and cite the MAGIC BMI paper[1].

References

1. Manning, A. K. *et al.* A genome-wide approach accounting for body mass index identifies genetic variants influencing fasting glycemic traits and insulin resistance. *Nature Genetics* **44**, 659–669 (2012).

2. Manning, A. K. *et al.* Meta-analysis of gene-environment interaction: joint estimation of SNP and SNP × environment regression coefficients. *Genet. Epidemiol.* **35**, 11–18 (2010).

Main effects meta-analysis

Files:
MAGIC_Manning_et_al_FastingGlucose_MainEffect.txt.gz
MAGIC_Manning_et_al_lnFastingInsulin_MainEffect.txt.gz

Fields:

Snp	The SNP name
effect_allele	The allele which was used to model the additive effect of the SNP
other allele	The non-effect allele
maf	The frequency of the minor allele
MainEffects	The main effect estimate (β_1) from the model: $Y= \beta_0+\beta_1*SNP$ obtained from an inverse variance meta-analysis

MainSE	The standard error of the main effect estimate (β_1) from the model: Y= $\beta_0+\beta_1$*SNP obtained from an inverse variance meta-analysis
MainP	The p-value from testing the significance of the β_1 estimate from an inverse variance meta-analysis of Y= $\beta_0+\beta_1$*SNP
BMIadjMainEffects	The main effect estimate (β_1) from the model: Y= $\beta_0+\beta_1$*SNP+β_2*BMI obtained from an inverse variance meta-analysis
BMIadjMainSE	The standard error of the main effect estimate (β_1) from the model: Y= $\beta_0+\beta_1$*SNP+β_2*BMI obtained from an inverse variance meta-analysis
BMIadjMainP	The p-value from testing the significance of the β_1 estimate from an inverse variance meta-analysis of Y= $\beta_0+\beta_1$*SNP+β_2*BMI

Interaction meta-analysis

Files:
MAGIC_Manning_et_al_FastingGlucose_Interaction.txt.gz
MAGIC_Manning_et_al_lnFastingInsulin_Interaction.txt.gz

Fields:

Snp	The SNP name
effect_allele	The allele which was used to model the additive effect of the SNP
other allele	The non-effect allele
maf	The frequency of the minor allele
InterEffects	The interaction effect estimate (β_3) from the model: Y= $\beta_0+\beta_1$*SNP+β_2*BMI+β_3*SNP*BMI obtained from an inverse variance meta-analysis
InterSE	The standard error of the interaction effect estimate (β_3) from the model: Y= $\beta_0+\beta_1$*SNP+β_2*BMI+β_3*SNP*BMI obtained from an inverse variance meta-analysis
InterP	The p-value from testing the significance of the β_3 estimate from an inverse variance meta-analysis
JMAcontBMI_MainEffect	The main effect estimate (β_1) from the model: Y= $\beta_0+\beta_1$*SNP+β_2*BMI+β_3*SNP*BMI obtained from a JMA
JMAcontBMI_MainSE	The standard error of the main effect estimate (β_1) from the model: Y= $\beta_0+\beta_1$*SNP+β_2*BMI+β_3*SNP*BMI obtained from a JMA
JMAcontBMI_InterEffect	The interaction effect estimate (β_3) from the model: Y= $\beta_0+\beta_1$*SNP+β_2*BMI+β_3*SNP*BMI obtained from a JMA
JMAcontBMI_InterSE	The standard error of the interaction effect estimate (β_3) from the model: Y= $\beta_0+\beta_1$*SNP+β_2*BMI+β_3*SNP*BMI obtained from a JMA
JMAcontBMI_P	The p-value from simultaneously testing the significance of the β_1 and β_3 estimates from a JMA